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Abstract

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Introduction

This paper analyzes variation in job opportunities for men and women in the Swiss labor market for the period 1962-1989. Job opportunities are conceptualized within the queuing approach (Thurow, 1975; Reskin, 1991), taking into account the structure of the Swiss labor market. The queuing approach maintains that employers rank workers in labor queues. They aim at hiring workers from as high in the labor queues as possible, offering the best jobs to the most preferred workers (Reskin, 1991:171f.). A person's average position in potentially accessible labor queues is thus indicative of employers' ranking criteria. As this paper focuses on job *opportunities* (i.e.,

the accessible pool of job openings), it does not theorize employment *chances* (i.e., the likelihood of being *selected* for a job within the accessible labor queue).[1]

Despite considerable theoretical interest in workers' job opportunities, empirical analyses are rather scarce. They are often limited to assessing employers' discriminatory practices regarding women or ethnic minorities (Correll *et al.*, 2007; Fibbi *et al.*, 2003; Petersen & Saporta, 2004). The reason is that job opportunities are difficult to measure at the individual level (see also Osberg, 1995). This paper aims at advancing this field of research by proposing an individual-level, time-dependent and parsimonious measurement of job opportunities. Based on annual occupation-level job advertisement data, capturing the excess demand for skills, the novel measurement indicates the average volume of job opportunities accessible for groups of workers with given occupation-specific credentials and other job-relevant characteristics, such as experience, sex and age. We link this measure with individual work career data and test hypotheses regarding the role of occupational credentials, educational achievement, experience, sex and age for a worker's position in the labor queue. In addition, we will assess the relative significance of these micro-level factors compared to macro-level factors, such as the changing economic situation, for individual job opportunities. The analyses are based on regression models. In view of the extensively gendered Swiss labor market, they are run separately for men and women.

We will begin this article by briefly reviewing previous research on job opportunities. Taking into account characteristics of the Swiss labor market, we will next present our theoretical considerations regarding individual job opportunities. We will then provide the rationale for our measurement of job opportunities with job advertisement data. The construction principles of the indicator and the criteria for matching it with individual career data will be described next. After the presentation of the findings we will make suggestions for future research.

Previous Research on Job Opportunities

Empirical research focusing on variation in individual job opportunities is still scarce. At the aggregate level, some research examines structural change in employment, thus allowing inferences regarding the development of general job opportunities by industry, education or occupation (e.g. Fagan *et al.*, 2005; Manacorda & Manning, 2007; Sheldon, 1993) or the impact of occupational

[1] The concept of *individual employment chances* takes into account that the likelihood of getting a job depends not only on job opportunities but also on the number and characteristics of competitors (see also Coleman, 1991).

change on individual labour-market mobility (DiPrete *et al.*, 1997; DiPrete & Nonnemaker, 1997; Harrison, 1988). Carroll et al. (1990) and Haveman and Cohen (1994) study the effect of firm closure, fusion, and company formation on individual careers. Another research tradition defines job opportunities as the chance of individuals to find a job after completion of formal education or after spells of unemployment, making use of individual-level transition data (e.g. Gangl, 2004; McQuaid, 2006). Some econometric work investigates the matching process between workers and jobs by looking at the effect of the number of job vacancies in specific areas on transitions into paid employment (Coles & Smith, 1996). Furthermore, some case studies focus on the hiring process, analyzing the role of sex, nationality, race or social networks (Fernandez *et al.*, 2005; Fibbi *et al.*, 2003; Petersen *et al.*, 2000) or investigate employers' demand of meritocratic and ascribed characteristics of future job incumbents based on job advertisement data (Anastas, 2006; Jackson, 2001; Jackson *et al.*, 2005). However, we are not aware of any research measuring job opportunities at the level of individual labor-market participants.

Regulating Mechanisms of the Swiss Labor Market

The Swiss labor market shows a profound segmentation by qualification accompanied by the principal of matching people to jobs according to occupation-specific credentials (Buchmann *et al.*, 2002; Levy *et al.*, 1997b). It is also very strongly segregated by sex, with men and women often training and working in different occupations and jobs (Buchmann & Kriesi, 2008; Charles, 2005; Charles & Grusky, 2004).

To capture the structure of segmentation in the Swiss labor market, Sengenberger's (1987) concept of the tripartite labor market is useful. It distinguishes three main segments, namely, the firm-internal segment, the occupation-specific segment, and the peripheral segment for unskilled labor. The *peripheral segment* is dominated by unskilled jobs for workers with no specific educational credentials. The *occupation-specific segment of the labor-market,* which is by far the largest, offers employment for people with institutionalized educational certificates. It is subdivided into numerous occupation-specific sub-segments. Whereas many sub-segments limit access to people holding a particular occupational credential, a substantial number can be entered by (closely) related occupational credentials. Thus, in general, mobility between sub-segments is limited, as it requires the time-consuming and costly acquisition of an occupation-specific credential. Job mobility within sub-segments, however, is largely unrestricted as creden-

tials are institutionalized and skills can easily be transferred between firms. In *internal labor-markets* – which only occur in large firms and are rare in Switzerland[2] – skilled workers are recruited for entry at the lower levels of the organizational hierarchy. From there, they have the possibility to climb up institutionalized career ladders and acquire firm specific skills and knowledge. It is important to note that access to many job vacancies, namely to those in the internal and in the occupation-specific segments, is contingent upon the possession of the appropriate occupational certificate. Occupational certificates are thus likely to affect individual job opportunities to a great extent.

Occupational sex segregation refers to the allocation of men and women to different occupations. In Switzerland, a large proportion of women work in a few female-typed and highly female-dominated occupations in health care and social work, teaching, sales and in clerical jobs (Charles & Grusky, 2004). Men are allocated to a much wider range of male-dominated and integrated occupations.[3] Occupational sex segregation goes hand in hand with gender-essentialist cultural beliefs in fundamental and innate gender differences, viewing women as particularly suited for jobs requiring nurturing and relationship skills (Buchmann & Kriesi, 2008; Charles & Bradley, 2009). Occupational sex segregation and the concomitant sex-typing of occupations is likely to affect women's and men's job opportunities.

Until the 1980s, Switzerland had one of the most sex segregated occupational structures within the industrialized world (Charles & Grusky, 2004). Despite a decrease and selective changes thereafter, the overall degree of occupational sex segregation remained surprisingly stable during the observation period. Figures for the year 2000 show that still more than half (52.4%) of the female workforce and over two thirds (69.1%) of the male work force worked in female- and male-dominated occupations respectively (Buchmann & Kriesi, 2008).[4] Women predominantly held textile industry, domestic, body care, (primary) education, and health care occupations. Men were strongly overrepresented in agriculture, craft, building trade, technical and

[2] The Swiss labor-market is dominated by small and medium sized firms (Buchmann *et al.*, 2009; Levy *et al.*, 1997a).

[3] Occupations with more than 70% of female workers are labelled as female-dominated. Vice-versa, male dominated occupations employ 70% or more male workers. Integrated occupations have a more equal gender distribution, employing between 30 and 70% of female workers (Charles & Buchmann, 1994).

[4] Female dominated occupations are defined as occupations with less than 30% men; male dominated occupations hold less than 30% women. In integrated occupations, between 30 and 70% of the incumbents belong to the same gender (e.g. Charles & Buchmann, 1991; Jacobs, 1989).

engineering, transport and security, and science occupations. Integrated occupations with a more even gender distribution included trade and sales, media and artistic occupations.[5]

Theoretical considerations

The conceptualization of individual job opportunities as the volume of job openings potentially accessible to individuals with given skills and other job-relevant characteristics is intertwined with two questions. The first one refers to how and to what extent macro-level processes shape the quantity of potentially accessible jobs. The second one asks how workers' characteristics are related to the volume of potentially accessible jobs.

Macro-level processes

The answer to the first question is linked to the changing composition of skill demand (i.e., occupational change) and to the economic climate. In general, job opportunities are more favorable in growing occupations and in periods of economic upswing (Sacchi *et al.*, 2005). Occupational change and change of the economic climate are often difficult to disaggregate. Changing job opportunities due to occupational change usually takes place at a slower pace compared to changing job opportunities due to economic upswings or downswings. In the short run, the latter affect individual job opportunities more strongly (Döpke, 1995).

Economic upswings have taken place in Switzerland from the mid-1960s until the beginning of the 1970s, from the late 1970s until the early 1980s and again from the mid-1980s until the early 1990s. Regarding sectoral and occupational change, the general pattern observed in other western countries also manifests itself in Switzerland. The agricultural and industrial sectors shrank while the service sector grew rapidly.[6] In parallel, the occupational structure changed. Employment in agricultural occupations as well as in the majority of occupations in the industrial sector decreased whereas the vast majority of (high- and low-skilled) service sector occupations grew.[7] This occupational change has gone hand in hand with constant skill upgrading of the work

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[5] Data source: Census data from the Swiss Federal Office of Statistics; figures are based on our own calculations.

[6] Employment in agriculture dropped from 15% in 1960 to 5.5% in 1990. The industrial sector, which employed almost half of the Swiss work force in 1960, decreased to 35% in 1990. At the same time, the service-sector grew rapidly, employing two thirds of the work force in 1990 (Bundesamt für Statistik, 1988, 1992, 2003).

[7] Textile- and leather industry as well as clock- and watch industry occupations showed a particularly pronounced loss of employment. At the other end of the scale, occupations in academia, public welfare, health care, IT, teaching and education, and law have displayed the highest growth rates between 1970 and 1990 (Leibundgut, 1986;

force. Employment of unskilled workers has thus decreased from almost 42% in 1970 to about 26% in 1990 (Leibundgut, 1986; Sheldon, 1995). .

Micro-level processes

In order to answer the second question of how workers' characteristics are related to the volume of potentially accessible jobs, we will forward theoretical considerations regarding the hiring criteria utilized by employers in a segmented labor market. Employers rank workers according to perceived economic efficiency requirements (Spence, 1973; Stiglitz, 1975; Thurow, 1975, 1979).. They seek to fill their vacant jobs with the most preferred workers who possess a specific set of resources (Coleman, 1991). As employers do not have reliable information about a potential employee's sought-after resources and productive capacity, hiring new workers is an investment decision made under uncertainty. In these situations educational credentials, occupational experience and other easily observable individual characteristics like age, sex, and nationality are used as "signals" and "indices" for productivity, trainability, and other desired features. Employers screen potential job incumbents according to skill and background characteristics and rank them on a continuum from the most to the least sought-after future employee. This results in a labor queue with employers first trying to hire workers from the top and only working their way towards the bottom of the queue if the workers placed at the top are unavailable.[8]

Against this background the question arises which factors determine the accessibility and the shapes of the labor queues in the Swiss labor market? We posit that occupational credentials serve as primary criteria to allocate workers to vacant jobs because the occupation-specific segment prevails in the Swiss labor market. Employers have very specific ideas about which occupational credential is necessary to fill a particular job, thus labeling the job vacancy accordingly. Without the required credential the chances to successfully apply for the vacant position in question are very slim. As a result job opportunities vary for people with different occupational credentials. First, occupations vary in size, thus leading to pools of job openings of different magnitude. Second, occupations vary in flexibility (Kaiser, 1983): Some occupational credentials ena-

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Sheldon, 1995). In absolute figures, the following industrial and service occupations employed the largest number of workers in 1990: commercial and administrative occupations (17.6%), sales and trade (8.5%), building trade (7.5%), machine construction and engineering (5.3%), hotel and restaurant (5.2%), managers, directors and magistrates (4.2%), health care (3.1%), and technicians (2.1%) (Sheldon, 1995:28)

[8] Additional criteria affecting hiring decisions are hiring habits (Windolf, 1986; Windolf & Hohn, 1984) and institutional characteristics of firms (Cohen & Pfeffer, 1986; Marsden, 1994; Marsden & Campbell, 1990)). We refrain from elaborating these factors as we will not be able to measure them empirically.

ble access to related sub-segments of the labor market (e.g., in the Swiss case, clerks, drivers, salespersons, art occupations, such as musicians, actors, designers) and thus to potentially greater job opportunities. Others are tied to a single sub-segment (e.g., in the Swiss case, teachers, health care occupations, IT-professionals or traditional craft occupations, such as carpenters, bakers, painters) (Buchmann *et al.*, 2002), which often goes hand in hand with smaller pools of potentially accessible jobs.

Compared to occupational credentials, general educational degrees (i.e., those that are not occupation-specific) play a minor role, serving as an allocation substitute only for people who have never completed occupational training. Among job applicants with similar occupational and educational credentials, job experience serves as a signal for productivity and workers with more experience generally have a better position in the labor queue.

Another element structuring employers' preferences within the Swiss labor-market is gender. As a result of the high and stable rate of gender segregation, with men and women training and working in different occupations, employers *and* workers looking for employment often have no doubts about whether a vacant job should be filled by a man or woman. In female-dominated labor-market segments women will be placed at the front of the labor queue. In integrated and particularly in male-dominated occupations we expect men to be placed at the front. The reason is that women are often considered to be less reliable workers than men, to show higher rates of absenteeism and job turnover. Employers thus tend to favor men. This should hold particularly for jobs with high replacement costs (Bielby & Baron, 1994). Labor queues therefore often act as gender queues (Reskin, 1991). Empirical studies for Switzerland show that this mechanism particularly plays out when vacancies with supervisory and management tasks are being filled (Ferro Luzzi & Flückiger, 1998, 2003).

Also very young workers find themselves relegated to the back of labor queues (Andrews *et al.*, 2002; Teyssière, 1996). They are thought to be less reliable and stable compared to older employees. At the other end of the age scale, workers who come close to retirement age have lower job opportunities particularly compared to middle-aged ones. Due to high fringe benefit costs and an overpay of older workers relative to their productivity they are more expensive to employ (Hirsch *et al.*, 2000).[9]

[9] Due to data restrictions, we won't be able to test this assumption.

Data and Methods

We will first describe the characteristics and properties of the two data sets used for the analyses. Next we will outline the construction principle of the dependent variable and describe the covariates, followed by the discussion of the statistical methods employed.

Data

The *Swiss Life History Study*, a mailed retrospective life-history survey conducted in 1989 provides the respondents' career data (Buchmann & Sacchi, 1997). It is representative for Swiss citizens of both sexes in the German-speaking part of Switzerland, born between 1949-51 and 1959-61, respectively (N = 2292).[10] The survey includes detailed biographical information on education, occupation and the family. Employment histories are recorded after completion of formal education. Transforming the data into person years, the final data set consists of 31'638 observations.

Using the *Swiss Job Monitor*, a representative *random sample of job ads* published in the German-speaking part of Switzerland between 1950 and 2007 (Sacchi *et al.*, 2005), we propose a novel way of constructing indicators for job opportunities. The sample was drawn by a two-stage method whereby approximately 70 newspapers and advertisers (stratified by region and circulation) were selected by chance. For each year, 500 job ads were then randomly selected. The full sample for the observation period considered here includes 26'500 job ads with a total of 34'000 vacant positions. The data provide *annual*, *occupation-level* information on the number of advertised jobs (i.e., job openings).

Job advertisements offer four important advantages and one disadvantage when using them as indicators for job opportunities. The first advantage is that they allow us to measure change in skill demand over time since published job ads can be collected retrospectively for any time periods. Second, job ads provide the great advantage of measuring directly the excess demand for skills, which is an excellent measure for job opportunities. The number of job ads depends on the extent to which the skill demand by employers exceeds the respective supply. Third, the measurement of the demand side is quite detailed. Most job ads include information on the requested occupational qualifications and characteristics of the prospective employee (e.g., occupation,

[10] The German-speaking part of Switzerland comprises about 65 percent of the population.

experience, sex, and age). From the perspective of the matching and queuing approach discussed earlier, job ads include detailed information about the composition of labor queues and employers screening criteria. Job ads serve as a first step for screening applicants according to criteria such as education, occupational credentials, experience, sex, and age. In the segmented Swiss labor market, occupational credentials play the most important role in the matching process. Consequently, nearly all job ads include an occupational title, while a considerable part also includes information on experience requirements, the preferred age group, and sex of the prospective employee. For these reasons, a large number of job ads with similar profiles published at any given point in time indicate good job opportunities for people with the requested qualifications and characteristics. Job ads are thus an excellent database for constructing indicators for *the demand of firms for narrowly defined groups of workers with specific credentials and other labor market relevant characteristics*. They provide a novel and innovative measure for the structure of the labor queue.

Fourth, job advertisement indicators can be easily linked with individual career data in order to obtain time-dependent measures of *individual job opportunities.*[11] This allows a parsimonious analysis based on multivariate methods. Indicators for skill demand based on job ads which are linked with individual data thus provide a more precise and direct measurement of job opportunities at an individual level than has hitherto been done. They are also well suited to predict individual career mobility such as transitions to self-employment or upward mobility (Buchmann *et al.*, 2007a, 2009).

One disadvantage is, however, the difficulty to distinguish between people with only average and less than average job opportunities. Job ads are better capable to differentiate between individuals with good and very good job opportunities because the recruitment strategy of placing job ads is most often used to fill vacancies for which it is difficult to find suitable candidates. Hard-to-fill vacancies may be the result of a high rate of job turnover in labor-market segments with unfavorable working conditions and low wages, thus causing the same jobs to become vacant several times in a short time span. Or they may be due to a shortage of workers with the required skills and characteristics, thus making it difficult for employers to fill positions with quali-

[11] They do not indicate *individual employment chances*, however. This would require additional information on the composition of the labor queue, i.e., the number and characteristics of competitors. Detailed information about selection mechanisms within the last application stages (i.e., inviting and choosing the final candidates) would in addition be needed to precisely determine individual employment chances.

fied employees. Vacancies that can easily be filled otherwise (e.g., informal search channels, self application etc.) will be published in newspapers less often.[12]

In sum, job advertisement data used for measuring skill demand indicate first and foremost the *intensity of the demand for particular combinations of occupational qualifications, work experience, and work-related personality attributes*. They thus show both the number of open positions within any given job category and the structure of the respective labor queue. These are precisely the properties that render job ads a highly appropriate data source for examining the *qualitative demand for skills* and the respective shifts across time

Dependent Variable

The *Swiss Job Monitor* data is used to construct individual-level indicators of job opportunities in four steps. *First*, we classify all advertised job vacancies for the years 1961 to 1989 by some of the screening criteria widely used in job ads. These are occupation, gender, age, and required experience. This procedure yields the number of job vacancies per year and occupation for eight groups of prospective employees: Men and women younger or older than 30 years with or without experience.

Second, we make use of Swiss Census Data to calculate the probability that a person holding a particular occupational credential holds a job in any specific occupation[13]. This intermediate step is necessary because the information provided in job advertisements is not always suf-

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[12] Additional analyses have shown that, despite this disadvantage, job ads are indeed a reliable source for measuring opportunity structures (see also Valletta, 2005). The findings of two Swiss firm surveys show, first, that approximately 44 percent of the vacancies occurring between 1992 and 1994 were advertised in print media. Second, the number of advertised vacancies remains the same in economically similar years (Sacchi *et al.*, 2005). These results provide evidence that a representative sample of job ads covers a considerable proportion of the overall skill demand. The vacancies most likely to be advertised are those for which it is not easy to find prospective incumbents. Vice versa, there seems to be hardly any vacancy that is not advertised on principle. We thus conclude that the more the particular skill demand exceeds the supply, the more likely it is that the respective vacancies will be advertised in print media.

[13] The Swiss Census Data include matrices of people's most recent occupation-specific credentials and their occupation-specific employment. The individual cells of these matrices show the degree to which given educational credentials are linked to particular occupations. For each cell of the matrices, we compute the *transition probability* according to the following formula:

$w_{ab} = x_{ab} / x_a$

w_{ab} transition probability of occupation-specific credential a to occupational activity b

x_{ab} Number of individuals equipped with occupation-specific credential a and active in occupation b

x_a Total number of individuals equipped with occupation-specific credential a

These transition probabilities may be interpreted as estimates of the *accessibility of job openings* for people with given occupation-specific (or no) credentials when applying for job openings within given occupations. Job vacancies in the 1960s (1961-1970) are linked with the 1970 Swiss Census Data; those in the 1970s with the 1980 Swiss Census; and those in the 1980s with the Data of the 1990 Swiss Census.

ficient to infer the exact educational prerequisites required to apply for an advertised job with reasonable prospect of success. Many job ads do not explicitly list educational requirements because they are taken for granted by employers and employees for given occupations. Furthermore, many educational credentials do not only provide access to one specific occupation but to an occupational sub-segment consisting of several closely related occupations.

Third, we construct job opportunity indicators by linking the job-advertisement data with the transition probabilities based on the following formula:

$$O_{iaj} = \sum_{b=1}^{B} \left(w_{ab} \cdot n_{ibj} \right) + \sum_{ob=1}^{OB} \left(w_{ob} \cdot n_{ibj} \right)$$

where:

O_{iaj}	Number of advertised jobs in year j weighted by the transition rate of individuals belonging to group i with occupation-specific credential a
w_{ob}	Transition rate into occupation b of individuals without any occupation-specific credentials
w_{ab}	Transition rate from occupation-specific credential a into occupation b
n_{ibj}	Number of published job openings in year j for occupation b which are accessible for individuals belonging to group i

This formula states that we multiply the number of advertised jobs per occupation and year with the transition probability related to each cell in the matrix of occupation-specific credentials and occupation-specific employment. Thereafter, we aggregate the estimated opportunity per occupation-specific credential (and the row referring to 'no occupation-specific credential'). Finally, we add, per occupation, a constant measuring the aggregated opportunity of people without any occupation-specific credential to the occupation in question.[14] This procedure is repeated for each calendar year and for each of the eight specified groups of prospective employees. It yields the number of job openings per year and per occupation (n = 267) advertised for eight groups of people: men and women under (and above) thirty years of age equipped with (and without) experience. Put differently, the procedure calculates the annual number of jobs which are potentially accessible for 2134 (8x267) different groups of workers.

Fourth, we match these annual indicators with the individual career history data on the basis of the respondent's occupation-specific credentials, gender, age, and occupational experiences at a given point in time. Job opportunities are thus adjusted whenever the respondent gains another credential, grows older and obtains more occupational experience.

[14] By doing this we take into account that people with occupation-specific credentials also have access to jobs which do not require any credentials.

Independent Variables

Our model includes one demand- and several supply-side covariates. On the demand side, the overall employment growth compared to the previous year captures the *economic cycle.*[15] The supply-side encompasses the following covariates: *Educational attainment,* a time-varying variable, distinguishes between primary/lower secondary education, apprenticeship (reference category), vocational college, baccalaureate, and tertiary education. *Labor-market experience* is a time varying covariate, measuring months worked since labor-force entry. Furthermore, a time-varying covariate refers to the *first received occupational credential*. Based on the two-digit code of the Swiss Federal Office of Statistics and additional recoding of very small occupational categories, we distinguish between 13 occupational groups.[16] People without any occupational credentials serve as reference group. Age is measured in years, and a dummy differentiates between members of the two *birth cohorts*, with respondents belonging to the younger cohort (1959-61) coded 1. The descriptives of all dependent and independent variables are shown in Table 1 in the Appendix.

Method

We employ a linear regression analysis to estimate the effects of supply and demand-side factors on individual job opportunities.[17] We run the models for men and women separately.[18] As our data contains repeated observations on individuals we specify the cluster option. By making use of the Huber/White/Sandwich estimator of variance (Huber, 1967) we take into account that the

[15] Data source: BESTA indicator from the Swiss Federal Office of Statistics. This is the best indicator available for the observation period. Graphic analyses (not shown) reveal that the indicator captures the economic upswings and downswings of the Swiss labor market as reported in the literature (Frick & Lampart, 2007; Sheldon, 1993) very well. It also correlates fairly highly with the change of the gross national product (r = 0.5).

[16] Due to their similar effect, we have combined the following occupational categories: 1) agriculture and food industry occupations (occupational groups 11 and 21); 2) building, metal, machinery trade/sales and higher service sector occupations (groups 31 and 32); 3) transport, communication and security occupations (groups 34,35,36); 4) Media, artistic and scientific occupations (groups 37,38,45); 4) social occupations, education and teaching (groups 43 and 44). Mining occupations, a group which contains hardly any cases, (group 24) have been combined with the category "other occupations".

[17] At first glance, a tobit model might lend itself as the most suitable method of analysis. However, the dependent variable is not censored as all our respondents have potential access to some advertised jobs (or technically speaking, all values of the dependent indicator "job opportunity" are positive).

[18] The models are estimated with weighted data.

observations are independent across groups but not within groups (i.e., individuals). Differences between men and women are assessed by estimating a joint model including interaction terms of gender and the other covariates. In order to assess the impact of the different covariates, we run the regression models stepwise and illustrate the respective explained variance. In addition, we decompose the residual variance of the models into a between-subject, a within-subject, and a non-additive part. The first component represents time-invariant differences in individual job opportunities. The second one captures unexplained macro changes in job opportunities, and the third individual-level changes not covered by the models. Thus, the decomposition may give some indications about the relative importance of different types of uncovered sources of individual job opportunities.

Results

The results of our multivariate regression analyses are presented in Table 1. Table 2 displays the explained variance (R^2) after a stepwise inclusion of the covariates. It is noteworthy that the explained variance of our models is very high, amounting to 75% for men and 72% for women. Our model thus includes factors which are highly relevant for individual job opportunities. Turning to the covariates, our demand-side indicator for the *economic cycle* indicates that individual job opportunities vary with the economic cycle.[19] In times of economic upswings the demand for workers with specific skills and particular characteristics grows significantly and shrinks during economic downswings. Interestingly, this effect is considerably stronger for men than for women. Job opportunities for women seem to be less sensitive to change in the economic cycle compared to opportunities for male workers. This is confirmed by a comparison of the R^2 in Table 2. Whereas the economic cycle explains 58% of the model variance for men, the respective figure for women is 19% only. Many women work in service sector occupations such as health care occupations, social work, teaching or catering occupations, which are known to be less exposed to cyclical fluctuations compared to most occupations in the industrial sector (Döpke, 1995).

As the Swiss educational system and the labor-market are dominated by occupation-based training, we expect *type of first certified occupational training* to produce large and persistent

[19] Models including a separate dummy variable for each year (results not shown) instead of the employment trend show that variance over time in job opportunities can be fully accounted for by the latter.

differences in individual job opportunities. The results in Table 1 confirm this expectation in three respects.

First, individuals holding an occupation-specific credential generally have significantly better job opportunities compared to unskilled workers. This is supported by an additional model (not shown), which includes a dummy variable distinguishing between workers with and without an occupational credential instead of the more detailed variable *first occupational credential*.[20] Unskilled male and female workers without an occupation-specific credential are thus placed at the bottom of the labor queues. This finding is in line with other research for Switzerland and Germany, showing that job opportunities for unskilled workers are decreasing (Rauch & Reinberg, 2000; Sheldon, 1995).

Second, job opportunities vary considerably by the type of the first gained occupational credential. The comparison of the occupational groups in the model for men shows that job opportunities are particularly abundant for workers with credentials for building, metal, machinery, electrical, wood and paper occupations, with credentials for trade, sales, and higher service sector, clerical and administrative occupations as well as for credentials in catering and domestic service occupations. These occupational sub-segments belong to the largest ones in the Swiss labor market. At the other end of the scale, health service occupations, social work and teaching offer comparatively few job opportunities for male workers. Agriculture and food industry, graphic, chemical industry, technical, transport, communication and security, and personal services, cleaning and caretaking occupations fall in between, offering about average job opportunities for men. For women, similar to men, the potentially accessible job pool is biggest for those holding credentials for trade, sales, higher service sector, clerical, and administrative occupation, and catering and domestic service occupations. In contrast, building, metal, machinery, electrical, wood and paper industry credentials, and graphic and technical occupation credentials offer very limited opportunities for women. The pattern of these findings supports the hypothesis that occupational credentials serve as an important ranking criteria of employers, who have clear ideas about the occupational credentials necessary to fill a particular job. As a result, job opportunities vary depending on the size and the flexibility of the occupational sub-segment to which a worker has access due to his or her credential.

[20] p=0.01%. Furthermore, the R^2 drops by 40% for women and by 26% for men if the dummy variable is included instead of the type of occupational credential.

Third, a comparison of the job opportunities for men and women holding the same type of occupational credential reveals that most occupational credentials offer different job opportunities for male and female workers, as shown in the last column of Table 1. Men enjoy significantly more favorable opportunities when they hold credentials for the traditionally male-dominated occupations in the industrial sector (codes 23-29). The lower or almost missing opportunities for women are due to employers' clear ideas that jobs within these sub-segments are "men's work" and thus unsuitable for women. As a result, female workers are ranked behind their male counterparts or even excluded from the relevant labor queues. However, women do face larger pools of jobs than men when holding credentials in trade, sales, and higher service sector, clerical and administrative occupations and in personal services, cleaning and caretaking occupations. In absolute figures, all of these sub-segments are either female-dominated or integrated, employing a large ratio of female workers. The pattern of these findings confirms Reskin's (1991) notion of labor queues as gender queues, where employer's use sex as one of the dominant ranking criteria. Women are placed before men only in the few groups of occupations employing a large proportion of female workers. The findings also support Charles' and Grusky's (2004:297) results that women crowd into few and often less desirable hypersegregated "occupational ghettos" in the nonmanual sector.

Despite their unfavorable opportunities in male-dominated occupational fields, women's job opportunities are generally better than men's, as illustrated by the constant in the models (and confirmed by a pooled analysis not shown). Two reasons may help to explain this result. First, occupational growth during the observation period has been concentrated in labor market segments employing a large proportion of women (e.g., health, social and personal services, teaching). The demand for female workers has thus exceeded their supply, resulting in abundant job opportunities for women. Second, job fluctuation in some female-dominated fields is comparatively high due to unattractive working conditions and contingent work (e.g., hotel and restaurant industry, certain health care occupations), leading to a large amount of published job ads and thus to a possible overestimation of women's employment opportunities in certain segments.

At this point, a brief discussion of the explained variance regarding the first occupational credential is in order. As Table 2 shows, this credential explains about 17% of variance for men and almost 46% for women. Occupational credentials thus determine women's job opportunities to a much greater extent and more lastingly than men's. This may reflect that women are locked into their first trained occupation to a much higher degree than men. We attribute this to the fact

that many Swiss women interrupt paid work due to the birth of children. This limits their opportunities for promotion or further training. In addition, many female-dominated occupations offer hardly any institutionalized opportunities for further training or career advancement (Buchmann *et al.*, 2007b). Examples are medical semi-professions (e.g. nursing), teaching or clerical jobs, which employ a great number of the female workforce, By contrast, many male-dominated occupations enable access to further training. Typical examples are jobs in the police force or in public transport (i.e., train or bus driver), which are traditionally accessed via male-dominated craft occupations (e.g., mechanics, electricians, carpenters).

Educational attainment shows a partially significant though week effect. Men holding a vocational college degree enjoy slightly better job opportunities than the reference group of men with a completed apprenticeship. Employers thus seem to value vocational college degrees higher. The same holds for women. Additionally, women with a Baccalaureate or a tertiary degree have lower job opportunities compared to the reference group as well as compared to their male counterparts holding the same degree. Jobs for highly educated people (with tertiary educational degrees) are often endowed with formal authority, high status and good salaries. Employers expect high work commitment and continuous and full-time work from incumbents of such jobs – characteristics that are ascribed to male rather than to female employees. As a result, women might be excluded from or relegated to the back of the relevant labor queues due to statistical discrimination.

The covariate for *labor-market experience* expectedly shows that the number of potentially available jobs rises with growing experience. For many jobs some kind of experience is a prerequisite for entering the labor queue, thus rendering the vacancy inaccessible for people without the required experience. As interesting as these results for educational attainment and experience may be, it must not be overlooked that the overall effect is negligible after the occupational credential is controlled for. Table 2 shows that educational attainment and experience contribute very little to the explained model variance (0.5% for men and 1% for women, the gender difference may reflect the higher prevalence of general educational degrees among women). This isn't surprising if we consider that the dominating matching principle in the Swiss labor-market is not based on *educational* but on *occupational* credentials. The latter serve as employers' primary ranking criteria. If workers with identical occupational credentials are available, educational attainment and labor market experience will serve as additional, but clearly secondary, ranking criteria.

Surprisingly, *age* shows a negative effect for men and women. Job opportunities are thus more favorable for young workers. However, age has very little explanatory power for men, as Table 2 shows. For women, the explained variance amounts to 1%. The negative finding may capture the fact that the number of published job ads shows a slight decreasing tendency from 1970 onwards. However, this interpretation does not yet explain the observed significant gender difference. It may be due to differences in male and female career patterns. Whereas men usually work continuously and full-time from labor-force entry to retirement, many Swiss women work for a few years and then interrupt paid employment for a longer period due to the birth of children (Buchmann *et al.*, 2003; Kriesi, 2006). Employers direct their recruitment behavior to such patterns by advertising job openings more often for very young women who have not yet entered the family phase. This interpretation is indirectly supported by evidence from the US, showing that women with children have lower chances to be hired for a vacant job than childless women or men (Correll *et al.*, 2007). It is also in line with Charles and Grusky's (2004:235) assumption that a large part of the female workforce in Switzerland consists of young and single (vocationally credentialed white-collar) workers.

Members of the younger birth cohort, born between 1959 und1961, are faced with smaller job pools compared to their older counterparts. Again and despite the statistically significant coefficients, the covariate explains a substantial part of the model variance (5.5%) for women only. The lower job opportunities for (female) members of the younger birth cohort indicated that job opportunities were generally less favorable during the 1980s when the younger cohort entered the labor market. Based on the available data it is difficult to explain why women in particular were faced with less job opportunities. Charles and Grusky's (2004) finding that employers increasingly filled the traditionally female domains of lower-level sales and service jobs with immigrant men may serve as a possible explanation.

Finally, we address the question of whether our models incorporate the relevant factors influencing men's and women's job opportunities. Table 3 displays the results of the decomposition of variance. First, the share of unexplained between-subject variance is small (5% and 6.7%), indicating that our models capture the relevant individual sources of job opportunities well. Second, the average within-subject component amounts to about 16% for both men and women. Thus, the observed changes in *average* job opportunities over time are not fully captured by our models. Imperfect measurement of labor demand on the macro-level may be one possible explanation. Third, unexplained changes at the individual level are small as the non-additive compo-

nent is less than 5% for both men and women. Given that our models do not only contain time-variant covariates, this indicates that individual job opportunities evolve quite similarly over time for both cohorts.

Conclusions

Our paper has addressed the question of how job opportunities of Swiss men and women vary by workers' characteristics and macro-level processes. For the segmented Swiss labor market, we define job opportunities as the volume of advertised job vacancies potentially accessible to individuals with given skills and other job-relevant characteristics. By linking annual occupation-level job advertisement data with individual career history data we are able to measure job opportunities at the individual level, capturing the excess demand for workers with specific skills and other labor-market-relevant characteristics.

As for macro-level processes, our findings show that individual job opportunities improve during economic upswings and deteriorate during downswings. Most interestingly, this effect is much more pronounced for men than for women. Female job opportunities are thus located in labor market segments, particularly in the service sector, which are less exposed to cyclical economical fluctuation due to their more stable structure of demand (Döpke, 1995).

On the micro-level, our findings confirm that occupational credentials play by far the biggest role for job opportunities in the Swiss labor market known to be strongly segmented along occupational lines. Together with gender, they serve as employers primary ranking criteria for the labor queues. First, individual job opportunities vary by type of occupational credential. In general, large occupational sub-segments offer more job opportunities than small ones. Second, the same occupational credentials offer different opportunities for men and women, thus highlighting the role of sex in the ranking process. Whereas many occupational credentials – particularly in male-dominated and integrated occupations – offer better opportunities for men, women benefit from the large job pools in the few highly female-dominated sub-segments. Third, the relevance of sex for the ranking process is also reflected in the finding that occupational credentials determine women's job opportunities to a much larger extent than men's. It is likely that the lack of institutionalized further training and career opportunities in female-dominated occupations combined with women's lower labor force attachment lock women into their original occupational sub-segment.

As to be expected in a labor market segmented along occupational lines, general educational degrees play a minor role. Among men, this is also true for age and cohort. Interestingly enough, women's job opportunities vary strongly with these two covariates, with very young women and those from the older cohort enjoying better job opportunities. Age may either capture a decreasing trend in the number of published job ads over time. Alternatively, the pronounced gender difference may reflect differences in career patterns and indicates employers' expectations for women to quit the labor force once they are getting close to the age of 30. As a result, women are relegated to the back of the labor queues once they come close to the prevalent age of family formation. The cohort effect indicates that job opportunities during the 1980s, when the majority of the younger cohort entered the labor market, were comparatively unfavorable. It remains unclear why this was particularly the case for women. Further research should shed more light on this particular issue.

The findings described in this article support several conclusions. First, they document that, by using job advertisement data, job opportunities can be measured more precisely at the individual level than has hitherto been possible. Individual job opportunities can also be well described by a simple model. This holds particularly for inter-individual differences in job opportunities, as the decomposition of unexplained variance shows. However, respective changes over time are not fully captured by our model. This probably indicates an incomplete measurement of context factors on the macro-level of the labor market or its occupational segments.

Second, our results have extended queuing theory by demonstrating for an occupationally segmented labor-market that occupational credentials serve as primary ranking criteria for employers, thus determining individual job opportunities to a large extent. For Switzerland, this implies that for a considerable proportion of workers – and particularly for women – job opportunities are predetermined at the young age of 16 or 17, when the majority of young people enter vocationally based occupational training. Workers whose trained occupation offers limited job opportunities may be forced to undergo costly and time-consuming vocational retraining.

Third, the findings of this study imply that the importance of employer's ranking criteria for labor queues depends on the labor-market structure. The high relevance of occupational credentials and sex should be typical for vocationally segmented and strongly gender-segregated labor markets. It is likely that occupational credentials play a lesser role in labor markets which are less occupationally oriented and have weaker boundaries between sub-segments, as is the case in Sweden or the US (DiPrete *et al.*, 1997). In such labor markets, the level of educational

attainment and the amount and type of work experience is likely to determine individual job opportunities to a larger extent. However, comparative research is needed to test such assumptions and to address the question of differences in employer's ranking criteria by type of labor market. Measures based on job advertisements such as employed for this analysis may serve as an ideal data base, provided that they systematically cover all types of jobs within a labor market.

Table 1: Determinants of individual job opportunities

	Men			Women			
	b	s.e.	t	b	s.e.	t	Δ
Demand-side							
Economic Cycle	0.264 ***	0.001	186.3	0.177 ***	0.002	92.51	***
Supply-side							
First occupational credential (unskilled)[1]							
Agriculture and Food industry (11, 21)	0.422 ***	0.046	9.09	0.264 ***	0.043	6.09	***
Building, metal, machinery, electrical, wood and paper industry (23-26)	0.598 ***	0.038	15.69	0.110	0.081	1.37	***
Graphic Occupations (27)	0.386 ***	0.039	9.86	0.134 *	0.064	2.08	**
Chemical Industry (28)	0.411 ***	0.038	10.93	0.289 ***	0.063	4.56	*
Technical Occupations (29)	0.458 ***	0.038	11.95	0.169 ***	0.040	4.17	***
Trade, sales, higher service sector, clerical, administrative (31-33)	0.867 ***	0.039	22.16	1.093 ***	0.029	37.34	***
Transport, Communication, Security (34-36)	0.333 ***	0.047	7.14	0.308 **	0.103	2.98	
Media, artistic, science occupations (37,38,45)	0.351 ***	0.042	8.41	0.310 ***	0.042	7.3	***
Catering, domestic service occup. (39)	0.973 ***	0.056	17.38	0.666 ***	0.057	11.71	***
Personal services, cleaning, caretaking (41)	0.466 ***	0.054	8.55	0.611 ***	0.035	17.33	**
Health services (42)	0.195 ***	0.038	5.1	0.374 ***	0.037	10.2	
Social Work and Teaching (43/44)	0.214 ***	0.025	8.44	0.217 ***	0.031	7.07	***
Other (24,46,47, 22)	0.403 ***	0.043	9.29	0.697 ***	0.033	21.01	**
Educational attainment (Vocational Training)							
Primary/lower secondary education	0.011	0.039	0.28	-0.017	0.033	-0.53	**
Vocational College	0.114 **	0.039	2.94	0.061 *	0.028	2.17	
Baccalaureate	0.072	0.046	1.57	-0.092 **	0.030	-3.04	***
Tertiary Education	0.016	0.017	0.96	-0.141 ***	0.039	-3.62	***
Months of labor-market experience	0.001 ***	0.000	5.05	0.001 ***	0.000	5.27	***
Age	-0.009 ***	0.003	-3.46	-0.030 **	0.002	-16.25	***
Birth cohort (0=1946-51, 1=1959-61)	-0.045 ***	0.011	-4.13	-0.372 **	0.015	-25.12	***
Constant	1.379 ***	0.061	22.71	2.854 ***	0.050	57.55	
N Observations	16150			15485			
N Clusters	1130			1030			
F	2608 ***			1050 ***			
df	21			21			
r2	0.754			0.720			

[1] The numbers in brackets refer to the two digit code of the occupational group

* p ≤ .05 / ** p ≤ .01 / *** p ≤ .001

Table 2: Explained Variance by Covariates

Model:[1]	**R^2 Men**	**R^2 Women**
Economic cycle only	57.9%	18.7%
+ First occupational Credential	74.7%	64.5%
+ Education and Experience	75.2%	65.5%
+ Age	75.3%	66.5%
+ Birth cohort[2]	75.4%	72.0%

[1] Complete models not shown [2]Equivalent to model in Table 1

Table 3: Decomposition of Unexplained Variance

Share of Total Variance (%)	**Men (%)**	**Women (%)**
Between-subject component	**5.0**	**6.7**
Within-subject component	**15.5**	**16.2**
Non-additive component	**4.5**	**4.8**

Appendix

Table 1: Descriptive Statistics

	Men				**Women**			
	Mean	SD	Min	Max	Mean	SD	Min	Max
Dependent variable								
Individual Job Opportunities	2.175	0.628	-0.1	3.7	2.788	0.675	1.3	4.5
Demand-side covariates								
Economic Cycle	1.695	1.791	-4.5	3.7	1.682	1.793	-4.5	3.7
Supply-side covariates								
First occupational credential[1]								
None (unskilled)	0.156	0.363	0	1	0.274	0.446	0	1
Agriculture and Food industry (11, 21)	0.101	0.301	0	1	0.016	0.124	0	1
Building, metal, machinery, electrical, wood and paper industry (23-26)	0.361	0.480	0	1	0.004	0.062	0	1
Graphic Occupations (27)	0.027	0.162	0	1	0.002	0.050	0	1
Chemical Industry (28)	0.016	0.125	0	1	0.008	0.090	0	1
Technical Occupations (29)	0.077	0.267	0	1	0.014	0.116	0	1
Trade, sales, higher service sector, clerical, administrative (31-33)	0.136	0.343	0	1	0.341	0.474	0	1
Transport, Communication, Security (34-36)	0.033	0.180	0	1	0.031	0.174	0	1
Media, artistic, science occupations (37,38,45)	0.023	0.151	0	1	0.015	0.123	0	1
Catering, domestic service occup. (39)	0.026	0.161	0	1	0.063	0.243	0	1
Personal services/cleaning/caretaking (41)	0.008	0.090	0	1	0.039	0.194	0	1
Health services (42)	0.008	0.092	0	1	0.100	0.300	0	1
Social Work and Teaching (43/44)	0.022	0.148	0	1	0.074	0.261	0	1
Other (24,46,47, 22)	0.004	0.064	0	1	0.019	0.136	0	1
Educational attainment								
Primary/lower secondary education	0.143	0.350	0	1	0.253	0.435	0	1
Vocational Training	0.583	0.493	1	0	0.467	0.499	0	1
Vocational College	0.064	0.245	0	1	0.129	0.335	0	1
Baccalaureate	0.037	0.189	0	1	0.090	0.286	0	1
Tertiary Education	0.173	0.378	0	1	0.061	0.239	0	1
Months of labor-market experience	95.839	68.060	1	322	71.363	52.679	1	365
Age	27.701	5.797	13	40	27.004	5.956	13	40
Birth cohort (0=1946-51, 1=1959-61)	0.327	0.469	0	1	0.367	0.482	0	1

[1] The numbers in brackets refer to the two digit code of the occupational group

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References

Anastas, J. W. (2006). Employment Opportunities in Social Work Education: A Study of Jobs For Doctoral Graduates. *Journal of Social Work Education*, *42*, 195-209.

Andrews, M. J., Bradley, S. & Scott, D. (2002). Matching the Demand for and Supply of Training in the School-to-Work Transition. *The Economic Journal*, *112*, C201-C219.

Bielby, W. T. & Baron, J. N. (1994). Men and Women at Work: Sex Segregation and Statistical Discrimination. In D. B. Grusky (Ed.), *Social Stratification in Sociological Perspective* (pp. 606-632). Boulder: Westview Press.

Buchmann, M. & Kriesi, I. (2008). Feminisierung der Arbeitswelt. In S. Larcher & B. Grubenmann (Ed.), *Tagesstrukturen* (pp. 51-64). Bern/Stuttgart/Wien: Haupt.

Buchmann, M., Kriesi, I., Pfeifer, A. & Sacchi, S. (2003). Dynamics of Women's Employment Careers: Labor-Market Opportunities and Women's Labor-Market Exit and Reentry. In W. R. Heinz & V. W. Marshall (Ed.), *Social Dynamics of the Life Course. Transitions, Institutions, and Interrelations* (pp. 117-141). New York: Aldine de Gruyter.

Buchmann, M., Kriesi, I. & Sacchi, S. (2007a). Changing Labor-Market Opportunities and Career Mobility. In M. Chapponière, Y. Flückiger, B. Hotz-Hart, F. Osterwalder, G. Sheldon & K. Weber (Ed.), *Bildung und Beschäftigung. Beiträge der internationalen Konferenz in Bern* (pp. 75-104). Zürich/Chur: Rüegger.

Buchmann, M., Kriesi, I. & Sacchi, S. (2009). Labor-Market, Job Opportunities and Transitions to Self-Employment: Evidence from Switzerland from the Mid-1960s to the Late 1980s. *European Sociological Review*, *25*, 569-583.

Buchmann, M. & Sacchi, S. (1997). *Berufsverlauf und Berufsidentität im sozio-technischen Wandel: Konzeption, Methodik und Repräsentativität einer retrospektiven Befragung der Geburtsjahrgänge 1949-51 und 1959-61*. Zürich: Eidgenössische Technische Hochschule, Professur für Soziologie.

Buchmann, M., Sacchi, S. & Kriesi, I. (2002). Qualifications, Dynamics of Skill Demand, and Career Outcomes. In F. Horváth (Ed.), *Forum Bildung und Beschäftigung. Workshop Dokumentation* (pp. 229-241). Bern: Universität Bern.

Buchmann, M., Sacchi, S., Lamprecht, M. & Stamm, H. (2007b). Tertiary Education Expansion and Social Inequality in Switzerland. In Y. Shavit, R. Arum, A. Gamoran & w. G. Menahem (Ed.), *Stratification in Higher Education. A Comparative Study*. Stanford: Stanford University Press.

Bundesamt für Statistik (1988). *Statistisches Jahrbuch der Schweiz 1989*. Zürich: Verlag NZZ.

Bundesamt für Statistik (1992). *Statistisches Jahrbuch der Schweiz 1991*. Zürich: Verlag NZZ.

Bundesamt für Statistik (2003). *Statistisches Jahrbuch der Schweiz 2003*. Zürich: Verlag Neue Zürcher Zeitung.

Carroll, G. R., Havemann, H. & Swaminathan, A. (1990). Karrieren in Organisationen. Eine ökologische Perspektive. In K. U. Mayer (Ed.), *Lebensverläufe und sozialer Wandel* (pp. 146-178). Opladen: Westdeutscher Verlag.

Charles, M. (2005). *Entwicklung der beruflichen Segregation nach Geschlecht und nach Staatsangehörigkeit in der Schweiz, 1970-2000*. Neuchâtel: Bundesamt für Statistik.

Charles, M. & Bradley, K. (2009). Indulging Our Gendered Selves? Sex Segregation by Field of Study in 44 Countries. *American Journal of Sociology*, *114*, 924-976.

Charles, M. & Buchmann, M. (1991). Exploring the Institutional Context of Human-Capital Development and Occupational Sex Segregation: The Case of Switzerland. In *Annual Meeting of the American Sociological Association*. Pittsburgh.

Charles, M. & Buchmann, M. (1994). Assessing Micro-Level Explanations of Occupational Sex Segregation: Human-Capital Development and Labour Market Opportunities in Switzerland. *Schweizerische Zeitschrift für Soziologie*, *20*, 595-620.
Charles, M. & Grusky, D. B. (2004). *Occupational Ghettos: The Worldwide Segregation of Women and Men*. Stanford: Standford University Press.
Cohen, Y. & Pfeffer, J. (1986). Organizational Hiring Standards. *Administrative Science Quarterly*, *31*, 1-24.
Coleman, J. S. (1991). Matching Process in the Labor Market. *Acta Sociologica*, *34*, 3-12.
Coles, M. & Smith, E. (1996). Cross-Section Estimation of the Matching Function: Evidence from England and Wales. *Economica*, *63*, 589-597.
Correll, S. J., Benard, S. & Paik, I. (2007). Getting a Job: Is There a Motherhood Penalty? *American Journal of Sociology*, *112*, 1297-1338.
DiPrete, T. A., de Graaf, P. M., Luijkx, R., Tåhlin, M. & Blossfeld, H.-P. (1997). Collectivist versus Individualist Mobility Regimes? Structural Change and Job Mobility in Four Countries. *American Journal of Sociology*, *103*, 318-358.
DiPrete, T. A. & Nonnemaker, K. L. (1997). Structural Change, Labor Market Turbulence, and Labor Market Outcomes. *American Sociological Review*, *62*, 386-404.
Döpke, J. (1995). Konjunkturzyklen im Dienstleistungssektor. *Die Weltwirtschaft*, *1995*, 311-324.
Fagan, C., O'Reilly, J. & Halpin, B. (2005). Job Opportunities for Whom? Labour Market Dynamics and Service Sector Employment Growth in Germany and Britain. In *WZB Discussion Paper No. 1011-9523*. Berlin, WZB Berlin.
Fernandez, R. M., Castilla, E. J. & Moore, P. (2005). Gendering the Job: Networks and Recruitment at a Call Center. *American Journal of Sociology*, *111*, 859-904.
Ferro Luzzi, G. & Flückiger, Y. (1998). Position hiérarchique et ségrégation sexuelle verticale: Le cas du canton de Genève. *Schweizerische Zeitschrift für Soziologie*, *24*, 59-77.
Ferro Luzzi, G. & Flückiger, Y. (2003). Analyse économique de la promotion des femmes par les employeurs du secteur privé et public. *Revue Economique et Sociale*, *61*, 59-64.
Fibbi, R., Kaya, B. & Piguet, E. (2003). *Nomen est omen: Quand s'appeler Pierre, Afrim ou Mehmet fait la différence*. Bern: Schweizerischer Nationalfonds.
Frick, A. & Lampart, D. (2007). *Entwicklung auf dem Schweizerischen Arbeitsmarkt seit 1980*. Zürich: KOF Swiss Economic Institute, Swiss Federal Institute of Technology.
Gangl, M. (2004). Labor Market Structure and Re-Employment Rates: Unemployment Dynamics in West Germany and the United States. *Research in Social Stratification and Mobility*, *20*, 185-224.
Harrison, R. J. (1988). Opportunity Models: Adapting Vacancy Models to National Occupational Structures. In A. L. Kalleberg (Ed.), *Research in Social Stratification and Mobility 7* (pp. 3-33). Greenwich: Jai Press Inc.
Haveman, H. A. & Cohen, L. E. (1994). Ecological Dynamics of Careers: The Impact of Organizational Founding, Dissolution, and Merger on Job Mobility. *American Journal of Sociology*, *100*, 104-152.
Hirsch, B. T., MacPherson, D. A. & Hardy, M. A. (2000). Occupational Age Structure and Access for Older Workers. *Industrial & Labor Relations Review*, *53*, 401-419.
Huber, P. J. (1967). The behavior of maximum likelihood estimates under non-standard conditions. In *Proceedings of the Fifth Berkeley symposium on mathematical statistics and probability* (pp. 221-233). Berkeley: University of California Press.
Jackson, M. (2001). Non-Meritocratic Job Requirements and the Reproduction of Class Inequality: An Investigation. *Work, Employment & Society*, *15*, 619-630.

Jackson, M., Goldthorpe, J. H. & Mills, C. (2005). Education, Employers and Class Mobility. *Research in Social Stratification and Mobility*, *23*, 3-33.

Jacobs, J. A. (1989). *Revolving Doors: Sex Segregation and Women's Careers*. Stanford: Stanford University Press.

Kaiser, M. (1983). Berufliche Flexibilität – Konzeption, Befunde, Schlussfolgerungen, Kritik und Forschungsperspektiven. In D. Mertens (Ed.), *Konzepte der Arbeitsmarkt- und Berufsforschung. Eine Forschungsinventur des IAB* Vol. 70 (pp. 357-444). Nürnberg: Institut für Arbeitsmarkt- und Berufsforschung der Bundesanstalt für Arbeit.

Kriesi, I. (2006). *Beschäftigungsmöglichkeiten und Erwerbskontinuität von Frauen. Zur Bedeutung des Stellenangebots für Erwerbsunterbrechungen und Wiedereintritte ins Berufsleben*. Zürich und Chur: Rüegger.

Leibundgut, H. (1986). *Die Bedeutung der beruflichen Mobilität als arbeitsmarktlicher Ausgleichsprozess. Eine empirische Untersuchung aufgrund der Eidgenössischen Volkszählung 1980*. Bern: Peter Lang.

Levy, R., Joye, D., Guye, O. & Kaufmann, V. (1997a). *Tous égaux? De la Stratification aux Représentations*. Zürich: Seismo.

Levy, R., Joye, D. & Kaufmann, V. (1997b). Changement Structurel et Mobilité Sociale en Suisse. *Schweizerische Zeitschrift für Soziologie*, *23*, 463-491.

Manacorda, M. & Manning, A. (2007). Shifts in the Demand and Supply of Skills in the OECD: A Single-Index Model with a Continuous Distribution of Skills. *Oxford Bulletin of Economics and Statistics*, *69*, 635-666.

Marsden, P. V. (1994). The Hiring Process: Recruitment Methods. *American Behavioral Scientist*, *37*, 979-991.

Marsden, P. V. & Campbell, K. E. (1990). Recruitment and Selection Processes: The Organizational Side of Job Searches. In R. L. Breiger (Ed.), *Social Mobility and Social Structure* (pp. 59-79). Cambridge: Cambridge University Press.

McQuaid, R. W. (2006). Job Search Success and Employability in Local Labor Markets. *Annals of Regional Science*, *40*, 407-421.

Osberg, L. (1995). The Missing Link - Data on the Demand Side of Labour Markets. *Analytical Studies Branch Research Paper Series, Statistics Canada*, *77*, 1-27.

Petersen, T. & Saporta, I. (2004). The Opportunity Structure for Discrimination. *American Journal of Sociology*, *109*, 852-901.

Petersen, T., Saporta, I. & Seidel, M.-D. L. (2000). Offering a Job: Meritocracy and Social Networks. *American Journal of Sociology*, *106*, 763-816.

Rauch, A. & Reinberg, A. (2000). Qualification and Employment Opportunities. *IAB Topics*, *38*, 4-28.

Reskin, B. F. (1991). Labor Markets as Queues: A Structural Approach to Changing Occupational Sex Composition. In J. Huber (Ed.), *Macro-Micro Linkages in Sociology* (pp. 170-192). Newbury Park/London/New Delhi: Sage Publications.

Sacchi, S., Salvisberg, A. & Buchmann, M. (2005). Long-Term Dynamics in Employer's Demand for Skills: Switzerland 1950-2000. In H. Kriesi, P. Farago, M. Kohli & M. Zarin-Nejadan (Ed.), *Contemporary Switzerland: Revisiting the Special Case* (pp. 105-134). Houndmills: Palgrave Macmillan.

Sengenberger, W. (1987). *Struktur und Funktionsweise von Arbeitsmärkten. Die Bundesrepublik Deutschland im internationalen Vergleich*. Frankfurt: Campus.

Sheldon, G. (1993). *Konjunkturelle und strukturelle Aspekte des schweizerischen Arbeitsmarktes*. Basel: Bundesamt für Konjunkturfragen.

Sheldon, G. (1995). *Die berufliche Flexibilität im Spiegel der Zeit*. Bern: Bundesamt für Statistik.

Spence, M. (1973). Job Market Signaling. *The Quarterly Journal of Economics*, *87*, 355-374.
Stiglitz, J. E. (1975). The Theory of "Screening", Education, and the Distribution of Income. *The American Economic Review*, *65*, 283-300.
Teyssière, G. (1996). Matching processes in the labour market. An econometric study. *Labour Economics*, *2*, 421-435.
Thurow, L. C. (1975). *Generating Inequality. Mechanisms of Distribution in the U.S. Economy*. New York: Basic Books.
Thurow, L. C. (1979). A Job Competition Model. In M. J. Piore (Ed.), *Unemployment and Inflation. Institutionalist and Structuralist Views* (pp. 16-32). White Plains, N.Y.: M.E. Sharpe, Inc.
Valletta, R. (2005). Help-Wanted Advertising and Job Vacancies. *RFBSF Economic Letter*, *2005*.
Windolf, P. (1986). Recruitment, Selection, and Internal Labor Markets in Britain and Germany. *Organization Studies*, *7*, 235-254.
Windolf, P. & Hohn, H.-W. (1984). *Arbeitsmarktchancen in der Krise: Betriebliche Rekrutierungsstrategien und soziale Schliessung. Eine empirische Untersuchung*. Frankfurt am Main: Campus.